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CONSTRUCTION TECHNOLOGIES

A. PROGRAM RATIONALE AND PHILOSOPHY

RATIONALE

Construction Technologies is important to students' education because this program:

- provides practical applications for knowledge, skills and attitudes from this strand and other courses
- integrates theory and practice
- develops competencies in Construction Technologies and other CTS strands that are relevant to every student as daily living skills
- builds self-reliance, independence and personal interest and occupational skills
- promotes development of student self-esteem and self-awareness through problem-solving skills and practical activities
- provides opportunities to develop portable skills that are relevant across a wide variety of career areas
- provides opportunities to exercise creativity in technological areas
- provides confidence-building experiences emphasizing a hands-on approach
- provides opportunities for self-directed learning through a variety of learning modules
- recognizes that the Career and Technology Studies curriculum can lend itself to a variety of student learning styles and ability levels
- can be delivered in a wide range of learning environments
- provides teachers with learning modules that allow for exploration of large number of interests.

PHILOSOPHY

Construction Technologies will demonstrate the Career and Technology Studies philosophy in the following manner:

- Teachers will individualize delivery and assessment techniques to suit their students' learning styles.
- Curriculum will be delivered using the student-directed approach with an appropriate developmental emphasis. Teachers will manage the learning situation according to developmental appropriateness.
- Hands-on activities will be emphasized.

- Integration of theory and practice will be emphasized throughout activities.

- All students will be encouraged to engage in activities in a safe environment with consideration of personal and psychological safety.

- Opportunities for cross-curriculum instruction will link CTS with science, mathematics, physics, English, biology, chemistry, business education and/or engineering.

- Integration of labs and classes will occur where beneficial. Students from different classes, strands and programs will work together in project teams.

- Teamwork and interpersonal skills will be developed in school and community settings and by addressing realistic problems.

- Design and problem solving will be incorporated into all modules.

- A variety of appropriate instructional environments (e.g., schools, the community, business, industry and other educational settings) will be used to the students' benefit.

B. GENERAL LEARNER EXPECTATIONS

Students will:

- demonstrate personal use and occupation-related knowledge, skills and attitudes in the school and community environment
- apply relevant knowledge, skills and attitudes from other Career and Technology Studies strands and academic or optional courses
- link theory to practical applications
- demonstrate relevant knowledge, skills and attitudes related to past, present and emerging technologies
- demonstrate effectiveness, efficiency and persistence to complete assigned or selected projects or tasks
- recognize relevant design and product standards and work site expectations
- work to personal, work site and environmental safety standards
- recognize his or her own personal strengths and attributes
- develop a positive self-concept/image
- prepare for independent living, workplace entry and/or further training/education
- recognize career opportunities for avocational and occupational activities
- demonstrate teamwork, human relations skills, creativity, adaptability and motivation
- apply effective and innovative problem-solving strategies in a variety of situations
- demonstrate a tolerance of opinions held by others.

C. STATEMENT OF CONTENT

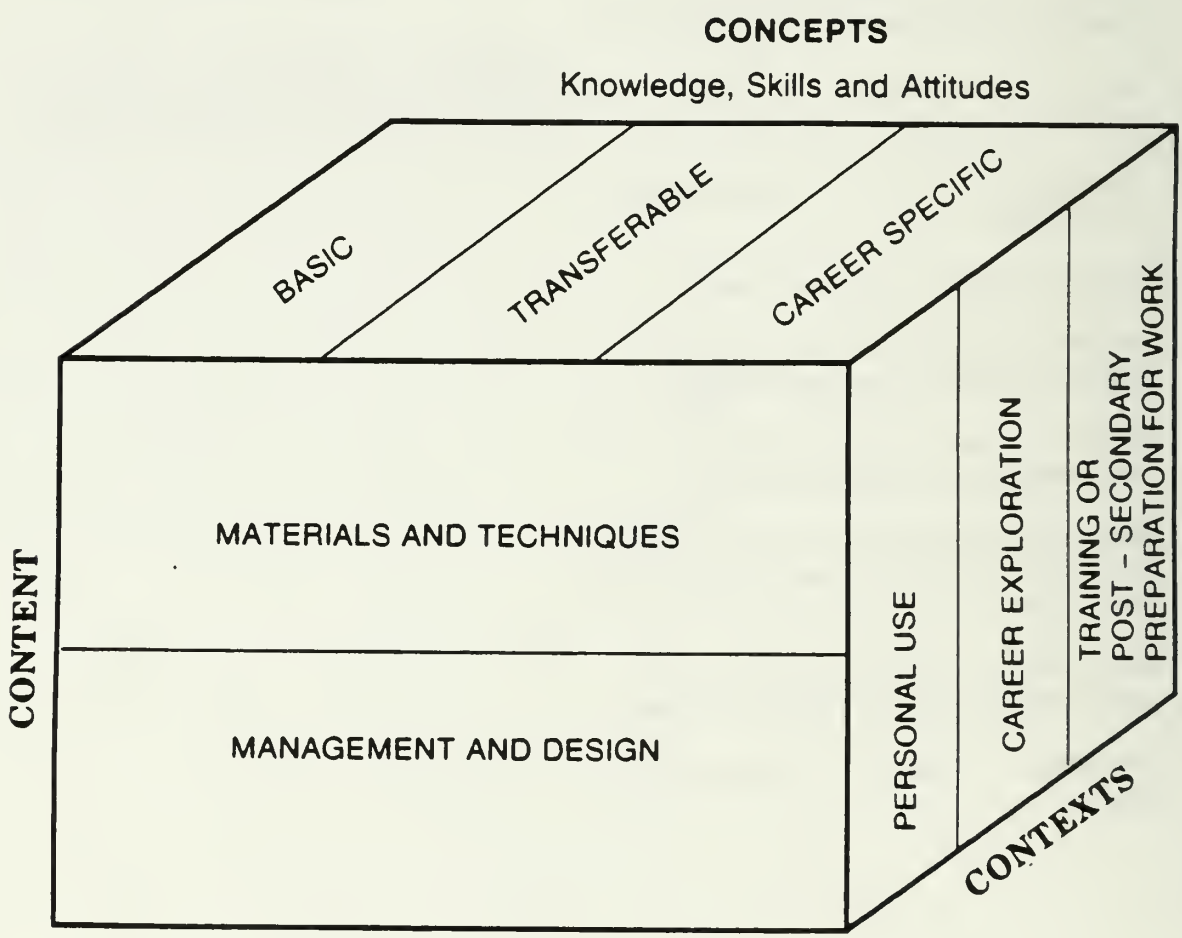
The Construction Technologies curriculum is designed around a model that illustrates the integration of the content, concepts and contexts.

CONTENT

The front face of the cube shows a classification of the content. The term **content** refers to what is taught. These classifications consist of "Materials and Techniques" and "Management and Design."

Materials and Techniques relates to the material and procedures used to produce a product such as a bookshelf, scaffold or home. Materials in this strand tend to be wood, plastic and earth products. Many of the modules provide opportunities to incorporate a mixture of materials or will substitute or alternate materials, such as metal. Techniques refers to the safe use procedures associated with the hand tools or power equipment selected for the task.

The **Management and Design** classification can be best understood if the term is broken into its two components. Management refers to the skills involved when working with other people in a workplace, the processes related to maintaining a safe, effective and efficient work site and decision-making. Design refers to identifying problems, creating alternatives, creating drawings, evaluating the finished product and determining improvements for future production. While these terms are defined separately, in reality they are interwoven in the context of Construction Technologies.



CONCEPTS

The **concepts**, consisting of knowledge, skills and attitudes (KSAs), are arranged across the top face of the cube. The terms basic, transferable and career specific shall be interpreted within this model to refer to only the Construction Technologies strand. A basic skill is one used within all areas of Construction Technologies. For example, swinging a hammer is a basic skill. Transferable skills shall be used in several areas, for example pulling nails with a claw hammer. Career-specific skills shall be used in only one area, for example, the use of a shingling hatchet to split cedar shakes for roofing. Other examples of basic, transferable and career-specific classifications are shown on the following chart.

CONTEXTS

The contexts are listed on the side of the cube. Context refers to how the concepts found within the context can be used by the student. For all students, Construction Technologies will provide life skills that they, as independent adults, can use for the rest of their lives. Many of the students can use this strand to explore career opportunities. While some students may select other fields of employment, others will decide that this is an interesting and worthwhile occupational path. Finally, some students will use Construction Technologies as a way of preparing for the world of work or for further occupational training.

The General Curriculum Integration Model is modified in the three levels in Construction Technologies by the addition of themes to the front face of the cube. This is done to emphasize the importance of integration for successful implementation of this strand.

Basic	Transferable	Career Specific
Identifying basic types of woods	Identifying wood features and defects	Selecting an appropriate wood for a project
Taking lineal measurements	Laying out cuts in material	Laying out of joists and stringers
Reading an illustration for details	Reading specifications for an installation of service lines	Reading engineer specifications to create shop drawings
Cutting with a hand saw	Using a power metre saw	Selecting, mounting and using a specialty metre saw blade for millwork tasks
Preparing a project materials list	Costing materials at a supplier	Developing a cutting list for a set of lintels
Performing basic computational operations (i.e., adding, subtracting, multiplying, dividing)	Using trigonometry to lay out angles	Engraving a truss design

INTRODUCTORY LEVEL MODULES

This network of modules is designed for the student who has little or no experience related to knowledge, skills and attitudes associated with the Construction Technologies strand. It is expected that the majority of the students in these modules will be an average age of 12 to 14 years old. Some older students may enrol in these classes in preparation for Intermediate and Advanced Level modules in Construction Technologies if they do not have the competencies and experience to challenge and "pass" the pretest for these modules.

Only one module is identified as a foundation module for those students enrolled in Introductory Level Construction Technologies. The students then select additional expansion modules to meet their own needs, the school's timetabling guidelines and available educational resources in the school and community. It is important to note that some modules have prerequisites. The content description is covered in greater depth in the teacher resource manual.

MODULE THEMES

Six themes have been incorporated into each Introductory Level module in Construction Technologies. These themes include

- Materials
- Tools and Equipment
- Fastening Systems
- Safety
- Design
- Finishing.

These themes are to be delivered at appropriate times within the instruction and experiences planned for Construction Technologies students. By integrating these themes into practical activities, the students will have the opportunity to understand the importance and relevance of the themes. If these themes were to be taught as separate modules without practical activities, the emphasis could be on theory lectures, which is inconsistent with the philosophy of Career and Technology Studies.

COMPOSITE MODULE OUTLINE

Introductory Levels

Materials and Techniques

- CTI 1 Component Fabrication and Assembly
- CTI 2 Project Construction Techniques
- CTI 3 Design and Joinery Processes
- CTI 4 Design and Integration
- CTI 7 Synthetic Fabrication and Repair
- CTI 8 Synthetic Recycling
- CTI 9 Molding Processes
- CTI 10 Precasting Processes

Management and Design

- CTI 5 Prototype Design and Production
- CTI 6 Mass Production

Note: Each module includes the following themes: Tools, Safety, Design, Fastening Systems, Finishing, Materials.

Foundation Module

Expansion Module

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PART D: CONGRUENCY WITH SPECIFIC AREA OF STUDY/STRAND

Name of Resource: _____

Area of Study/Strand: **CONSTRUCTION TECHNOLOGIES (Draft)**

In this resource, support for the learner expectations outlined is as follows:

LEARNER EXPECTATIONS	RESOURCE CORRELATION
GENERAL LEARNER EXPECTATIONS Students will: • demonstrate personal use and occupation-related knowledge, skills and attitudes in the school and community environment • apply relevant knowledge, skills and attitudes from other Career and Technology Studies strands and academic or optional courses • link theory to practical applications • demonstrate relevant knowledge, skills and attitudes related to past, present and emerging technologies • demonstrate effectiveness, efficiency and persistence to complete assigned or selected projects or tasks • recognize relevant design and product standards and work site expectations • work to personal, work site and environmental safety standards • recognize his or her own personal strengths and attributes • develop a positive self-concept/image • prepare for independent living, workplace entry and/or further training/education • recognize career opportunities for avocational and occupational activities • demonstrate teamwork, human relations skills, creativity, adaptability and motivation • apply effective and innovative problem-solving strategies in a variety of situations • demonstrate a tolerance of opinions held by others.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Component Fabrication and Assembly **Module Learner Expectations** The student will trace and cut out simple kit components and assemble the parts according to directions and examples provided by the teacher. The resulting projects will meet dimensional and appearance specifications set out by the teacher. **Specific Learner Expectations** **Materials** The student will: • select appropriate materials for projects according to the parameters of selection (i.e., cost, grade, suitability for use, availability, student's ability) • describe materials and processes in standard terminology • lay out and use materials economically • manipulate the materials to minimize damage. **Tools and Equipment** The student will: • select and use appropriate tools and/or equipment for each project • use accepted techniques to maximize the effectiveness of the tools and/or equipment • care for tools and/or equipment properly • follow verbal and/or written directions to assemble a kit. **Safety** The student will: • consistently use all safety rules and guidelines associated with the tasks and environment in this module	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Component Fabrication and Assembly (continued) **Specific Learner Expectations** **Safety (continued)** The student will: • identify common hazards associated with the environment they are working in • inspect for and recognize common hazards associated with the environment they are working in. **Design** The student will: • design and/or build their projects to given standards • follow teacher directions and simple plans to lay out, make and assemble kit components • explain the importance of following directions. **Fastening Systems** The student will: • select a suitable fastening system for the projects according to the parameters for selection (i.e., materials, environment, cost, appearance, strength, Building Codes, project purpose). **Finishing** The student will: • produce a project finish using appropriate materials and techniques.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Project Construction Techniques **Module Learner Expectations** The student will select a simple project incorporating butt joints, measure and lay out the components from a working drawing, cut out, assemble and finish the project. **Specific Learner Expectations** **Materials** The student will: • select appropriate materials for projects according to the parameters of selection: cost, grade, suitability, availability • know and use the correct terminology (standard terminology) for the materials, equipment and processes used for a particular project) • be able to lay out and use materials economically in the construction of all project work. **Tools and Equipment** The student will: • be able to select and use appropriate tools and/or equipment for each project • always use accepted techniques to maximize the effectiveness of the tools and/or equipment • be able to care for tools and equipment. **Safety** The student will: • consistently utilize all safety rules associated with the tasks and environments in this module.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Project Construction Techniques (continued) **Specific Learner Expectations** **Design** The student will: • design and/or build a project to a given standard. **Fastening Systems** The student will: • select a suitable fastening system according to the parameters for selection. **Finishing** The student will: • produce a project finish using an appropriate material and technique.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Design and Joinery Processes **Module Learner Expectations** The student will create or modify plans for a project with lap, dado, rabbet or mitre joints; then cut out, assemble and finish the project. **Specific Learner Expectations** **Materials** The student will: • select appropriate materials for projects according to the parameters of selection: cost, grade, suitability, availability • know and use the correct terminology (standard terminology) for the materials, equipment and processes used for a particular project • lay out and use materials economically in the construction of all project work. **Tools and Equipment** The student will: • be able to select and use appropriate tools and/or equipment for each project • always use accepted techniques to maximize the effectiveness of the tools and/or equipment • care for tools and/or equipment • be able to use drawing tools to design or alter project plan and then use lay out tools to transfer the design to the material. **Safety** The student will: • consistently utilize all safety rules and guidelines associated with the tasks and environments in this module.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Design and Joinery Processes (continued) **Specific Learner Expectations** **Design** The student will: • design and/or build a project to a given standard • be able to create a unique design or alter an existing plan to serve a specific purpose, using standard drafting equipment. **Fastening Systems** The student will: • be able to select a suitable fastening system according to the parameters for selection. **Finishing** The student will: • produce a project finish using an appropriate material and technique.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Design and Integration **Module Learner Expectations** The student will design, lay out, cut out, assemble and finish a project that incorporates two or more different types of materials and techniques from Construction Technologies and another CTS strand. **Specific Learner Expectations** **Materials** The student will: • be able to select appropriate materials for projects according to the parameters of selection: cost, grade, suitability, availability • know and use the correct terminology (standard terminology) for the materials, equipment and processes used for a particular project • lay out and use materials economically in the construction of all project work. **Tools and Equipment** The student will: • be able to select and use appropriate tools and/or equipment for each project • always use accepted techniques to maximize the effectiveness of the tools and/or equipment • care for tools and/or equipment • be able to use CAD software to design a project plan and then use layout tools to transfer the design to the material. Safety The student will: • consistently utilize all safety rules and guidelines associated with the tasks and environments in this module	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Design and Integration (continued) **Specific Learner Expectations** **Design** The student will: • utilize CAD software to communicate a practical design that integrates materials and disciplines from other CTS strands. **Fastening Systems** The student will: • be able to select a suitable fastening system according to the parameters for selection. **Finishing** The student will: • produce a project finish using an appropriate material and technique.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Prototype Design and Production **Module Learner Expectations** The student will work as a team member to select and design a simple, marketable product made with techniques and materials the group is familiar with. A prototype of the product will be made to test out the design and procedure. **Specific Learner Expectations** **Materials** The student will: • select appropriate materials for projects according to the parameters of selection (i.e., cost, grade, suitability for use, availability, student's ability) • describe materials and processes in standard terminology • lay out and use materials economically • manipulate the materials to minimize damage. **Tools and Equipment** The student will: • select and use appropriate tools and/or equipment for each project • use accepted techniques to maximize the effectiveness of the tools and/or equipment • care for tools and/or equipment properly. **Safety** The student will: • consistently use all safety rules and guidelines associated with the tasks and environment in this module • identify common hazards associated with the environment they are working in	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Prototype Design and Production (Continued) **Specific Learner Expectations** **Safety (continued)** The student will: • inspect for and recognize common hazards associated with the environment they are working in. **Design** The student will: • design and/or build their projects to given standards • actively participate in group planning activities • identify a problem, restate it, provide possible solutions, consider the feasibility of each possible solution and select the best one • conduct a market feasibility studies • as a team member, select an appropriate design that has the following characteristics: – simple design – material that is easily accessible – marketable product. **Fastening Systems** The student will: • select a suitable fastening system for the projects according to the parameters for selection (i.e., materials, environment, cost, appearance, strength, Building Codes, project purpose). **Finishing** The student will: • produce a project finish using appropriate materials and techniques.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Mass Production **Module Learner Expectations** The student will work as a team member to manage the production and marketing of a product made by students in another module. **Specific Learner Expectations** **Materials** The student will: • select appropriate materials for projects according to the parameters of selection (i.e., cost, grade, suitability for use, availability, student's ability) • describe materials and processes in standard terminology • lay out and use materials economically • manipulate the materials to minimize damage. **Tools and Equipment** The student will: • select and use appropriate tools and/or equipment for each project • use accepted techniques to maximize the effectiveness of the tools and/or equipment • care for tools and/or equipment properly • actively participate as a team member in the production and marketing of the product. **Safety** The student will: • consistently use all safety rules and guidelines associated with the tasks and environment in this module • identify common hazards associated with the environment they are working in	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Mass Production (continued) **Specific Learner Expectations** **Safety (continued)** The student will: • inspect for and recognize common hazards associated with the environment they are working in. **Design** The student will: • design and/or build their projects to given standards • assist in the design of an efficient production line • assist in the project management as directed by the teacher • discuss the advantages and disadvantages of a variety of production methods (i.e., line production, unit production, team production) • discuss current issues related to manufacturing • work as a team member • interpret drawings • develop a production schedule. **Fastening Systems** The student will: • select a suitable fastening system for the projects according to the parameters for selection (i.e., materials, environment, cost, appearance, strength, Building Codes, project purpose). **Finishing** The student will: • produce a project finish using appropriate materials and techniques.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Synthetic Fabrication and Repair **Module Learner Expectations** The student will lay out, cut out and assemble simple projects made of synthetic materials. **Specific Learner Expectations** **Materials** The student will: • select appropriate materials for projects according to the parameters of selection (i.e., cost, grade, suitability for use, availability, student's ability) • describe materials and processes in standard terminology • lay out and use materials economically • manipulate the materials to minimize damage. **Tools and Equipment** The student will: • select and use appropriate tools and/or equipment for each project • use accepted techniques to maximize the effectiveness of the tools and/or equipment • care for tools and/or equipment properly. **Safety** The student will: • consistently use all safety rules and guidelines associated with the tasks and environment in this module • identify common hazards associated with the environment they are working in • inspect for and recognize common hazards associated with the environment they are working in.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Synthetic Fabrication and Repair (continued) **Specific Learner Expectations** **Design** The student will: • design and/or build their projects to given standards. **Fastening Systems** The student will: • select a suitable fastening system for the projects according to the parameters for selection (i.e., materials, environment, cost, appearance, strength, Building Codes, project purpose). **Finishing** The student will: • produce a project finish using appropriate materials and techniques.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Synthetics Recycling **Module Learner Expectations** The student will select and recycle suitable plastics into a project. **Specific Learner Expectations** **Materials** The student will: • select appropriate materials for projects according to the parameters of selection (i.e., cost, grade, suitability for use, availability, student's ability) • describe materials and processes in standard terminology • lay out and use materials economically • manipulate the materials to minimize damage • identify the problems associated with plastics recycling • identify the common names of synthetics that can be recycled • identify common articles that are made of recyclable materials. **Tools and Equipment** The student will: • select and use appropriate tools and/or equipment for each project • use accepted techniques to maximize the effectiveness of the tools and/or equipment • care for tools and/or equipment properly.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Synthetics Recycling (continued) **Specific Learner Expectations** **Safety** The student will: • consistently use all safety rules and guidelines associated with the tasks and environment in this module • identify common hazards associated with the environment they are working in • inspect for and recognize common hazards associated with the environment they are working in. **Design** The student will: • design and/or build their projects to given standards **Fastening Systems** The student will: • select a suitable fastening system for the projects according to the parameters for selection (i.e., materials, environment, cost, appearance, strength, Building Codes, project purpose). **Finishing** The student will: • produce a project finish using appropriate materials and techniques.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Molding Processes **Module Learner Expectations** The student will create and use a mold to form a product related to Construction Technologies. **Specific Learner Expectations** **Materials** The student will: • identify and select the appropriate materials to produce a functional project given the parameters of selection, (i.e., cost, grade, suitability, availability, student's ability) • describe the materials and processes using standard industry terminology • select and use appropriate materials economically using standard layout or forming techniques • experience and become knowledgeable about several common materials and mixtures used in molding and casting • exhibit the necessary caution in handling materials. **Tools and Equipment** The student will: • select and use the appropriate tool or equipment for each project • use accepted techniques and maximize the effectiveness of the tools and equipment used • demonstrate care in the use of and maintenance of the tools and/or equipment • identify and describe the processes used in molding and casting.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Molding Processes (continued) **Specific Learner Expectations** **Safety** The student will: • consistently use all safety rules and guidelines associated with the tasks and environment in this module • identify common hazards associated with the environment they are working in. **Design** The student will: • identify and relate molding and casting processes used in school with those used on work sites (i.e., home workshops, repair industries, manufacturing) Features to include: – setup – pouring – extrication – finishing – facility requirements • identify a variety of products created in molding and casting processes. **Fastening Systems** The student will: • select a suitable fastening system for the projects according to the parameters for selection (i.e., materials, environment, cost, appearance, strength, Building Codes, project purpose). **Finishing** The student will: • produce a project finish using appropriate materials and techniques.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Precasting Processes **Module Learner Expectations** The student will build a mold and then mix and pour a suitable concrete mixture to create a precast product. **Specific Learner Expectations** **Materials** The student will: • select appropriate materials for projects according to the parameters of selection (i.e., cost, grade, suitability for use, availability, student's ability) • describe materials and processes in standard terminology • lay out and use materials economically • manipulate the materials to minimize damage. **Tools and Equipment** The student will: • select and use appropriate tools and/or equipment for each project • use accepted techniques to maximize the effectiveness of the tools and/or equipment • care for tools and/or equipment properly. **Safety** The student will: • consistently use all safety rules and guidelines associated with the tasks and environment in this module • identify common hazards associated with the environment they are working in • inspect for and recognize common hazards associated with the environment they are working in.	

LEARNER EXPECTATIONS	RESOURCE CORRELATION
Module: Precasting Processes (continued) **Specific Learner Expectations** **Design** The student will: • design and/or build their projects to given standards • be able to identify concrete applications and structures in their community. **Fastening Systems** The student will: • select a suitable fastening system for the projects according to the parameters for selection (i.e., materials, environment, cost, appearance, strength, Building Codes, project purpose). **Finishing** The student will: • produce a project finish using appropriate materials and techniques.	

MANUFACTURING PROCESSES MODULES

Advanced Level

	(7)	(8)
Materials and Techniques	**Prefabrication** MPA 1 • Kit assembly • Unit installation	**Fabrication Methods** MPA 2 • Jigs • Production work • Assembly line **CAM** MPA 3 • Process and procedure **Production Project** MPA 5 **Experience** • Team work/Integration
Management and Design		**Production Marketing** MPA 4 **Production Management** MPA 6 • Recruiting and managing staff • Budgeting • Scheduling

RENOVATION AND RESTORATION MODULES

Advanced Level

	(7)	(8)	
Materials and Techniques	**Historical Restoration RRA 1** • Research • Methods • Materials	**Furniture Restoration RRA 2** • Project evaluation • Repairs • Disassembly • Stripping • Finishing safely • Traditional technologies and skills	
	Restoration Skills RRA 3 • Turning operations • Carving • Specialized jointery • Splining • Material matching • Veneering	**Building Renovations I RRA 4** • Project assessment • Structural considerations • Architectural esthetics • Environmental concerns	**Building Renovations IIRRA 5** • On-site experience
Management and Design			

CB: 91 01 08

MILLWORK OPERATIONS MODULES

Advanced Level

	(7)	(8)
Materials and Techniques	**Cabinetry** **MOA 1** • Custom-built cabinets	
Management and Design		

COMMERCIAL CONSTRUCTION MODULES

Advanced Level

	(7)	(8)	
Materials and Techniques	**Exterior Finishing CCA 1** • Brick and block procedures	**Concrete Work CCA 2** • Concrete design • Form work • Reinforcement • Finishes • Joints • Fasteners • Transportation • Placement • Shoring and reshoring • Stair work	**Elements of Commercial Construction CCA 3** • Curtain walls • Beams • Girders • Built-up roofs (tar and gravel)
Management and Design		**Commercial/ Construction Research/Design CCA 4** **Production/Marketing CCA 6**	**Design Factors CCA 5** Advanced Level Engineering/Design **Construction Research and Design CCA 7** • Engineering factors (stresses, beam deflectors) **Form Design Physics CCA 8** **Site Management CCA 9** • Critical paths, advanced • Problem solving • Time management • Personnel management

RESIDENTIAL CONSTRUCTION MODULES

Advanced Level

	(7)	(8)		
Materials and Techniques	**Framing III** RCA 1 • Ceiling framing • Roof framing systems design • Gable roof framing • Intersecting roof • Residential truss systems • Post and beam construction	**Roof Systems Experience** RCA 2 • On-site experience	**Building Foundations** RCA 3 • Footings, forming • Types of foundations • Preserved wood foundations • Transportation • Design	
	Framing Enrichment I RCA 4 • Conventional • Roof systems		**Site Preparation** RCA 5 Building operations • Safety • Batterboard • Layout • Excavation • Transit level • Shoring	
	Framing Enrichment II RCA 6 • Truss design systems • Roof systems		**Stair Design and Construction** RCA 7 • Rise and Run • Stair types • Stairwell calculations • Handrail requirements	
	Exterior Finishing I RCA 8 In school/siding materials: • metal • brick • plastic • block • vinyl • paving stones • wood • parging • stucco	**Exterior Finishing II** RCA 9 • Installation of exterior windows and doors • Exterior siding operations	**Exterior Finishing III** RCA 10 Roof coverings • asphalt • Methods of installing roof coverings • shakes • metal • ceramic	**Exterior Finishing IV** RCA 11 • On-site experience
Management and Design	**Presentation and Communication** RCA 12 From: Communication Studies	**Challenge and Opportunity** RCA 13 From: Enterprise and Innovation	**Putting a Plan Into Action** RCA 14 From: Enterprise and Innovation	

MANUFACTURING PROCESSES MODULES

Intermediate Level

	(5)	(6)
Materials and Techniques		
Management and Design	**Production and Planning** MPI 1 • CAD use • Scheduling	**Manufacturing Systems Design** MPI 2 • TQM • JIT • CAM • CIM

Foundation Module

Expansion Module

CB: 91 01 08

RENOVATION AND RESTORATION MODULES

Intermediate Level

	(5)	(6)
Materials and Techniques		**Residential Systems*** **RRI 1** • Safety • Installation • Plumbing • Drainage • Electrical • Heating • Cooling **Residential Piping** **RRI 1** • Nature of plumbing and drainage • Safety • Common plumbing • Installation **Residential Wiring** · **RRI 3** • Construction wiring and rewiring • Nature of electricity • Electrical safety procedures • Purpose of conductors • Purpose of circuits • Common circuits
Management and Design		**Entrepreneurship in Renovation** **RRI 4** • Research • Disassembly • Estimating

Foundation Module

Expansion Module

MILLWORK OPERATIONS MODULES

Intermediate Level

	(5)	(6)	
Materials and Techniques	**Millwork I** MOI 1 • Cabinet/furniture construction and design • Joints • Specialty materials • Design stresses • Jigs • Hardware	**Millwork II** MOI 2 • Installing cabinets, doors, drawers • Trim • Finishing	**Furniture Millwork** MOI 3 • Furniture design • Furniture manufacture • Production lines • Processes • Economy of scale
Management and Design	**CAD I** MOI 4 • Planning and communication • Technical drawing (Pictorial – orthographic)		

Foundation Module

Expansion Module

CB: 91 01 08

COMMERCIAL CONSTRUCTION MODULES

Intermediate Level

	(5)	(6)
Materials and Techniques	**Introduction to Commercial Construction** CCI 1 • Careers • Projects **Commercial Interior Finishing** CCI 2 • Metal stud framing • Spray finishing	
Management and Design		

Foundation Module

Expansion Module

RESIDENTIAL CONSTRUCTION MODULES

Intermediate Level

	(5)	(6)	
Materials and Techniques	**Framing I** RCI 1 • Common framing systems • Wall and partition framing	**Framing II** RCI 2 • Floor framing • Joist systems • On site	**Wall framing** RCI 3 • On-site experience
	Interior Finishing I RCI 4 • Use of insulations and vapour barriers/air barriers • Drywall procedures (taping, spraying)	**Interior Finishing II*** RCI 5 • T-bar ceiling installation • Decorating (paint, wallpaper, panelling, trim installation)	**Interior Finishing III** RCI 6 • On-site experience
Management and Design	**CAD II** RCI 7 Planning and Communication • Architectural drawing	**Visual Design Techniques** RCI 8 From: Design Studies	
		Energy Efficient Housing Design RCI 9 • Location • Energy demands • Wall configurations • Air barriers, vapour barriers	

Foundation Module

Expansion Module

CB: 91 01 08

CONSTRUCTION TECHNOLOGIES

	INTRODUCTORY	INTERMEDIATE		ADVANCED			
Foundation	Component Fabrication and Assembly CTI 1		CAD I MOI 4				
Expansion	Project Construction Techniques CTI 2	Framing I RCI 1	Interior Finishing III RCI 6	Framing III RCA 1	Framing Enrichment II RCA 6	Exterior Finishing IV RCA 11	Residential Construction
	Design and Joinery Processes CTI 3	Framing II RCI 2	CAD II RCI 7	Roof Systems Experience RCA 2	Stair Design and Construction RCA 7	Presentation and Communication RCA 12	
	Design and Integration CTI 4	Wall Framing RCI 3	Visual Design Techniques RCI 8	Building Foundations RCA 3	Exterior Finishing I RCA 8	Challenge and Opportunity RCA 13	
	Prototype Design and Production CTI 5	Interior Finishing I RCA 4	Energy Efficient Housing Design RCI 9	Framing Enrichment I RCA 4	Exterior Finishing II RCA 9	Putting a Plan Into Action RCA 14	
	Mass Production CTI 6	Interior Finishing II* RCI 5		Site Preparation RCA 5	Exterior Finishing III RCA 10		
	Synthetic Fabrication and Repair CTI 7	Introduction to Commercial Construction CCI 1	Commercial Interior Finishing CCI 2	Exterior Finishing CCA 1	Commercial/ Construction Research/Design CCA 4	Construction Research and Design CCA 7	Commercial Construction
	Synthetic Recycling CTI 8			Concrete Work CCA 2	Design Factors CCA 5	Form Design Physics CCA 8	
	Molding Processes CTI 9			Elements of Commercial Construction CCA 3	Production/Marketing CCA 6	Site Management CCA 9	
	Precasting Processes CTI 10	Millwork I MOI 1	Millwork II MOI	Cabinetry MOA 1			Mill-Work
			Furniture Millwork MOI 3				
		Residential Systems * RRI 1	Residential Wiring RRI 3	Historical Restoration RRA 1	Restoration Skills RRA 3	Building Renovations II RRA 5 • On-site Experience	Renovation and Restoration
		Residential Piping RRI 2	Entrepreneurship in Renovation RRI 4	Furniture Restoration RRA 2	Building Renovations I RRA 4		
		Production and Planning MPI 1	Manufacturing Systems Design MPI 2	Prefabrication MPA 1	Production Marketing MPA 4		Manufacturing
				Fabrication Methods MPA 2	Production Project Experience MPA 5		
				CAM MPA 3	Production Management MPA 6		

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